February 12, 1992

MEMORANDUM

To: Sally Goodell

From: Bruce Wicherski

Subject: South Slough Sampling Workplan

Below is the workplan for the proposed sampling event along the South Slough.

SOUTH SLOUGH MONITORING WORKPLAN

BACKGROUND

As part of the investigation regarding the sources and transport of PCE contamination in surface and ground water in West Boise, the South Slough has been sampled on three separate dates, October 19th and 30th, 1990 (which constituted one complete sampling of the slough) and July 18th, 1991. Samples taken along the slough have consisted of surface water samples, groundwater seeps, the Westpark air stripper discharge to the slough, and drain water entering the slough at discrete discharge points. Of the 16 samples taken to date only 5 have been repeat samples taken at the same location. PCE concentrations in the samples have ranged from below reporting limit to 224 ppb. Trends in concentration with location along the slough have tended to indicate an increase in the vicinity of Emerald Rd. and then decrease in the vicinity of Maple Grove Rd. However, the entire length of the slough was not sampled in the same locations during each event and discharge measurements have never been taken.

It has been conjectured that the slough may gain and lose water through different reaches along it's length with a corresponding potential to spread PCE. The air stripper discharge water from the Westpark remediation system, in operation since the spring of 1990, has also been implicated as a possible source of spreading of PCE contamination.

OBJECTIVES

The objectives of this sampling event would be to: 1) gather initial information to determine if the slough is gaining or losing through different reaches and 2) to correlate these gaining or losing reaches with PCE concentrations in the slough. It is important to determine the hydraulic relationships between the slough and ground water during both the irrigation and non-irrigation periods of the year. At this time of the year, the primary contributions to water found in the slough are air stripper discharge water and ground water recharge, with no irrigation inputs.

METHODS

At seven locations along the length of the slough in the impacted area discharge measurements and water samples would be taken. These locations are indicated on Figure 1. These locations correspond to sampling points from previous events and are described as:

1. South Slough below the air stripper discharge.

2. South Slough at Emerald Rd. (south of road).

3. South Slough at Ridenbaugh Canal (north of canal).

4. South Slough at Maple Grove (east of road and prior to canal diversion input).

5. South Slough at Irving (north of road).

6. South Slough at Kimball (east of road).

7. South Slough at Mitchell (east of road).

At each location flow measurements will be taken as follows; At each reach enough vertical measurements across the stream will be taken so that no greater than 10% of the stream is represented by each section. Measurement depth will be at 0.6 of total stream depth (as measured from the surface). Flow velocity will be measured with a Marsh-McBirney model 210D flowmeter. Discharge is computed as the product of cross-sectional area and velocity, and is averaged over all vertical sections sampled.

At each sampling location field parameters will be measured. These will include specific conductivity, temperature, and pH. Water samples will be taken at each location and analyzed by the State of Idaho Health Laboratory for volatile organic compounds using EPA Method 502.2. Samples will be taken by submerging the 40 ml. sampling vials below the water surface at the mid-stream width with the open end tipped up facing upstream. The cap will then be opened and the vial filled and sealed with no air bubbles. Samples will be immediatly placed on ice in a cooler and brought to the lab for analysis. Duplicate 40 ml. samples will be taken at each location. In addition to the samples taken at each location one duplicate, one travel blank, and one transfer blank will be included for analysis for QA/QC.

REFERENCES

Division of Environmental Quality. 1990, 1991. Unpublished data.

Environmental Protection Agency. 1987. A Compendium of Superfund Field Operations Methods. EPA/540/P-87/001.

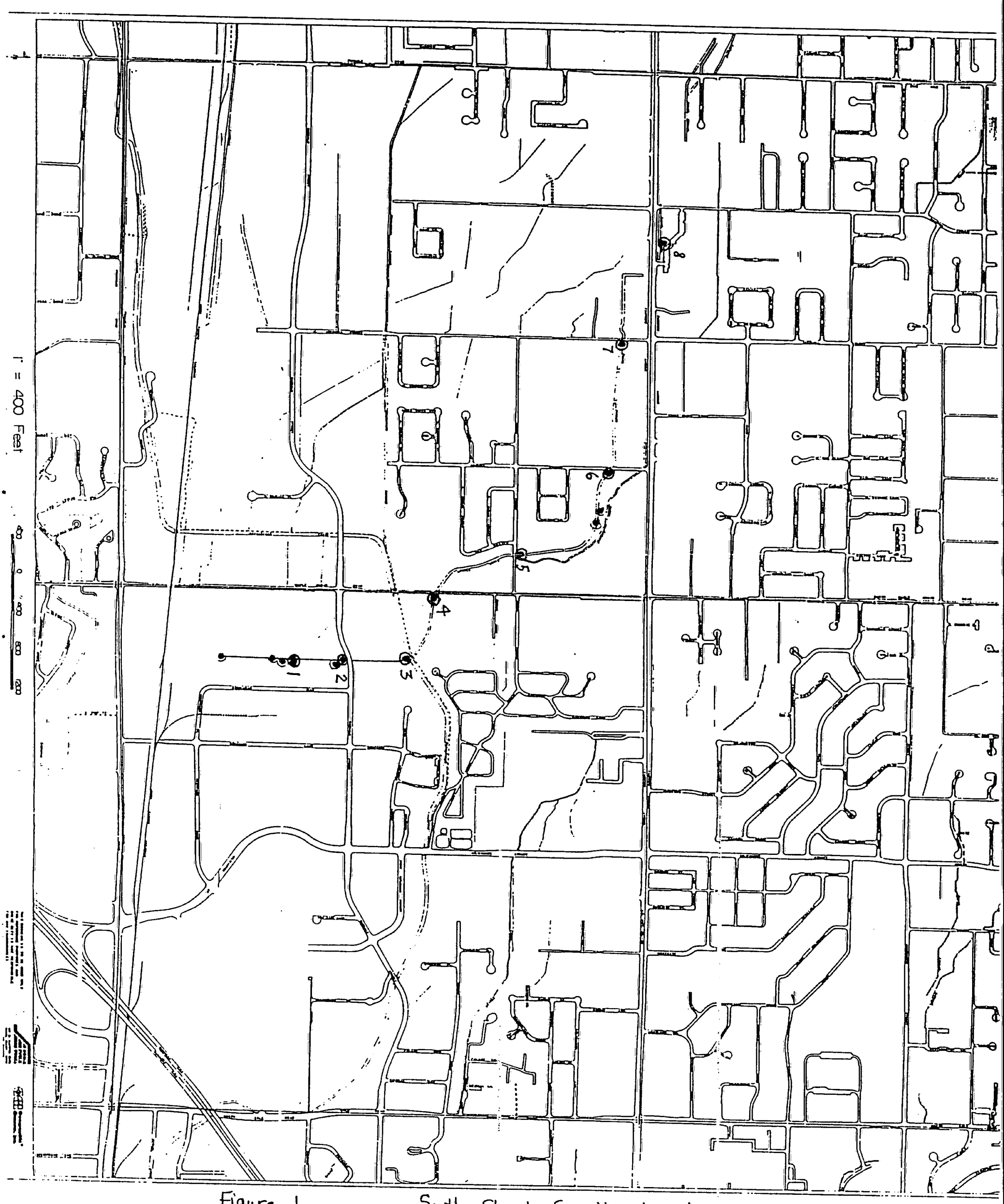

Figure 1. South Slough Sampling locations